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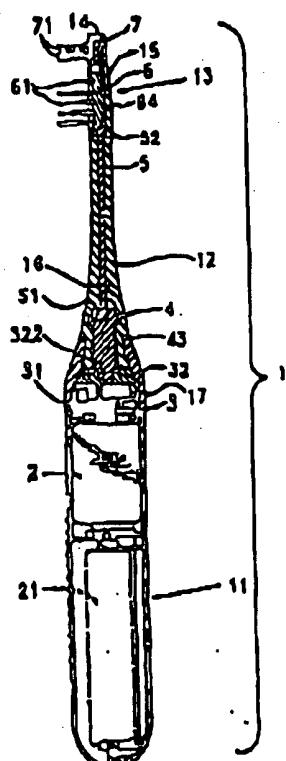
## [57] 申請專利原因：

1. 一般電動牙刷之改良，包括：  
一中空刷柄，具有一齒刷、一頭刷，及  
一沉頭牙刷頭與刷頭部的頭部；頭面  
部有一圓形底孔與一四方形底孔，且該  
頭部有一可供供應元件；  
一馬達具有二個凸頭，由該元件供應元件  
供給電能；  
一往復運動齒頭單元，由該馬達之凸頭  
驅動而產生一往復旋轉運動；  
一刷桿，固定在該刷柄之頭部，其下端  
由該往復運動齒頭單元駕動，而使該刷  
桿在該頭部產生逆向平行度之往復旋轉  
運動，且該刷桿之上端伸入該刷頭之頭  
部；  
一四方形刷頭，直入該刷頭底部之四方  
形底孔中，其外緣有刷毛，內緣為一半  
圓柱狀頭，倘上下端各以一沉頭牙刷頭  
在該四方形底孔中，且該內緣下方有一  
底刷面，內與上述刷桿之上端接合並可  
該刷桿上操作並推動，使該刷頭之外
2. 如申請專利範圍第 1 項所述之電動牙刷  
之改良，其中還包括：  
一圓柱體狀之往復運動刷頭，供送入該  
刷頭頭部之圓形底孔中，其外緣有刷毛  
，內緣有一凹心形孔；  
上述四方形刷頭上端具有一側凹槽，供  
嵌入該往復運動刷頭之凹心形孔中，而  
該凹槽在該運動刷頭產生在初運動。
3. 如申請專利範圍第 1 項所述之電動牙刷  
之改良，其中上述四方形刷頭與一卡扣  
構成一複位卡結合。
4. 如申請專利範圍第 2 項所述之電動牙刷  
之改良，其中上述四方形刷頭與一卡扣  
構成一複位卡結合。
5. 如申請專利範圍第 3 項或第 4 項所述之  
電動牙刷之改良，其中上述複位卡具一  
斜向槽供上述刷桿上端插合並能運動。
6. 如申請專利範圍第 1 項所述之電動牙刷  
之改良，其中上述刷桿之頭部內有一緊

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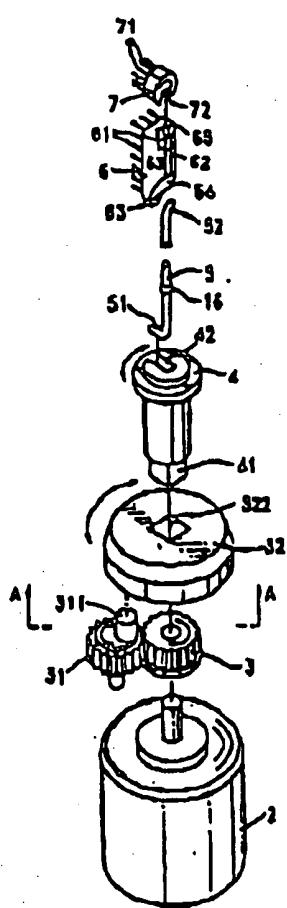
(1)

第五圖可配合第一至第四圖實用。  
件在某一端之凹處為可充電池時，得  
以取外部電流供電。



第一圖

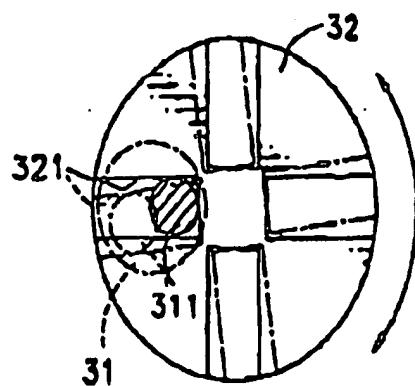
第六圖類似於第五圖，但顯示另一  
利用感應發電方式供電設計。



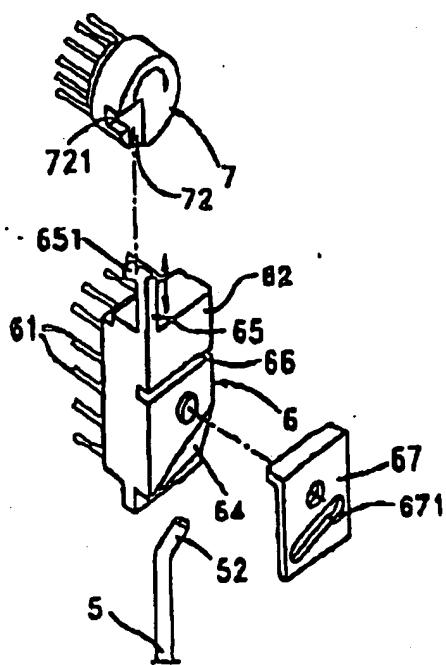
第二圖

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第二圖



第四圖

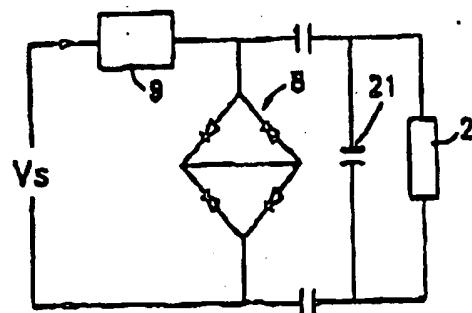
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S. YAMAMOTO OSAKA

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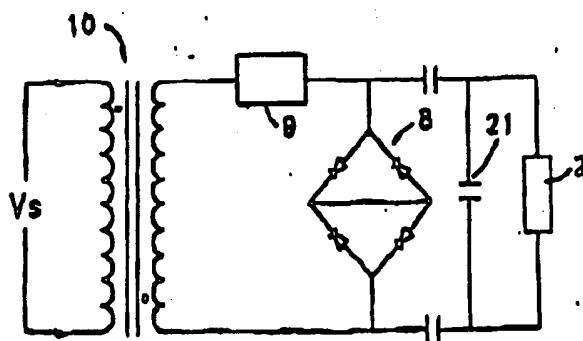
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第五圖

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第六圖

D

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**IMPROVEMENTS TO AN ELECTRIC TOOTHBRUSH**

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**Claims**

1. Improvements to an electric toothbrush, which include:  
a hollow brush handle that is comprised of a handle part, a head part and a neck part that connects said handle part and said head part; said head part is provided with a round base opening and a square base opening and said handle part is equipped with an electrical power supply component;  
a motor, equipped with an output shaft, for which an electric current is provided by said electrical power supply component;  
a reciprocating rotational drive unit, which is driven by the output shaft of said motor and which causes a reciprocating rotational movement;  
a swing arm, which is installed in the neck part of said brush handle, the lower end of which is driven by the reciprocating rotational drive unit such that said swing arm makes a reciprocating rotational movement within a certain angle in the [illegible] direction around the [illegible] part, and the upper end of which extends into the head part of said brush handle;

a square brush head which fits into the square base opening in the head part of said brush handle, the outer periphery of which is provided with bristles and the inner periphery being a semicircular column, and the upper and lower edges are fixed along the same axial line inside said square base opening; underneath said inner periphery there is a slanted base surface that is in contact with the upper end of said swing arm and makes a reciprocating movement by means of the upper end of said swing arm, thereby causing the outer periphery of said brush head make a similar reciprocating movement.

2. Improvements to an electric toothbrush in accordance with Claim 1, which also include:

a cylindrical brush head capable of reciprocating rotation is provided for insertion into the round base opening in the head of said brush handle, bristles are provided on its outer periphery, and an eccentric slot hole is provided at its inner periphery;

the upper end of said square brush head is equipped with a driving arm capable of reciprocating rotation that can be inserted into the eccentric slot hole of said brush head such that said brush head capable of reciprocating rotation is made to move in a reciprocating manner.

3. Improvements to an electric toothbrush in accordance with Claim 1, in which said square brush head is equipped with a holding slot used for joining with a repositioning piece.

4. Improvements to an electric toothbrush in accordance with Claim 2, in which said square brush head is equipped with a holding slot used for joining with a repositioning piece.

5. Improvements to an electric toothbrush in accordance with Claim 3 or 4, in which said repositioning piece is equipped with a slanted slot for use by the upper end of said arm to [illegible] and move.

6. Improvements to an electric toothbrush in accordance with Claim 1, in which a waterproof seal that is in tight contact with said arm is provided inside the head of said brush handle.

7. Improvements to an electric toothbrush in accordance with Claim 1, in which a matching set of connectors is provided for the upper end of said handle part and a waterproof packing is provided between said set of connectors and the lower end of said neck part.

8. Improvements to an electric toothbrush in accordance with Claim 1 or 2, in which the slanted bottom surface of said square brush head slants downwards in the direction from said inner periphery to said outer periphery, and a driving arm is positioned immediately above and behind said inner periphery.

9. Improvements to an electric toothbrush in accordance with Claim 8, in which said inner periphery slants from its right side towards its left side, and a driving arm is positioned above one side of said inner periphery.

a group of coil circuits that are used to generate excitation current and that are placed inside the handle part of said brush handle;

an electric charger, inside of which there is a power supply cord that is used to input electricity from an outside power source and several groups of electromagnets that are arranged for various polarities and sizes, and that excite the coil circuits placed inside the charger;

a rectifier for rectification of the electric current input from the outside source such that electrical safety is maintained.

18. Improvements to an electric toothbrush in accordance with Claim 17, in which said electrical power supply unit further comprises a protection device such that the rechargeable battery is not overcharged.

19. Improvements to an electric toothbrush in accordance with Claim 18, in which said protection device is a relay device.

Brief description of the figures

Figure 1 is a view of an application example of the improvements to an electric toothbrush of the present invention.

Figure 2 is an exploded oblique view of the main parts inside the hollow brush handle of the present invention shown in Figure 1.

Figure 3 is a view of Figure 2 along the line A-A.

Figure 4 is similar to Figure 2 except that it shows another application example.

Figure 5 can apply to either Figure 1 or Figure 4 and when the battery in Figure 1 is a rechargeable battery, an outside power source is used to supply electricity.

Figure 6 is similar to Figure 5 except that it shows another design using inductive excitation.

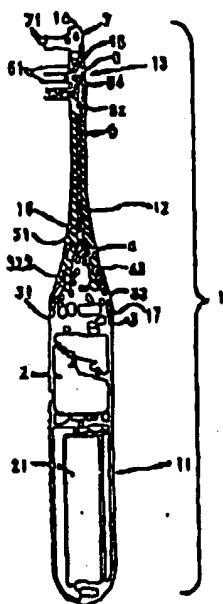


Figure 1

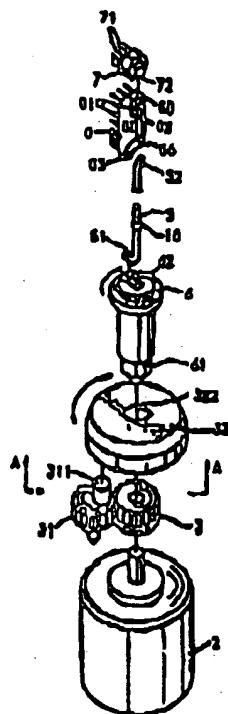


Figure 2

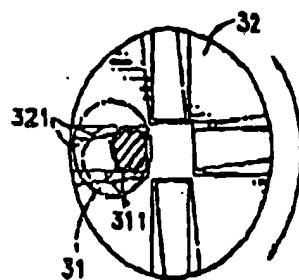


Figure 3

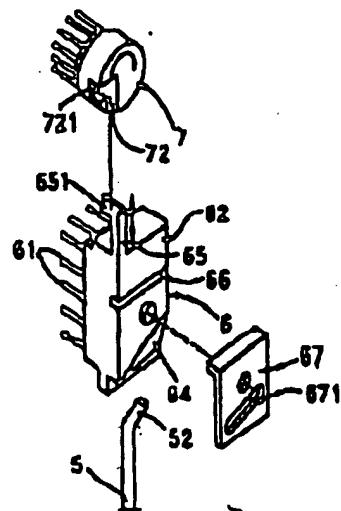


Figure 4

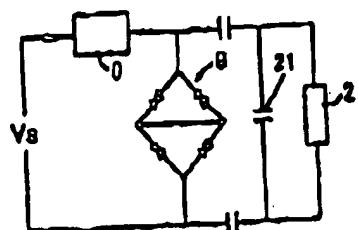


Figure 5

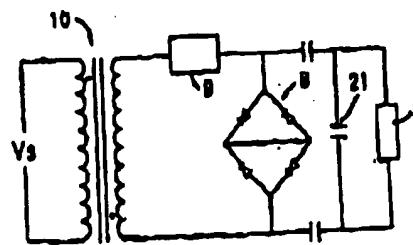


Figure 6

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